

AMENDMENTS TO THE CLAIMS

Please amend claims 1, 4, 6 through 9, 13, 14, 16 through 18, 20, 22, 24, 27, 29 through 34 and 36, cancel claim 3 and add new claims 38 through 40 such that the claims of the application have the following formulations and statuses:

1. (Currently amended) A feedback oscillator device formed with an integrated circuit, said device comprising:

a semiconductor material substrate having a conductive ground plane on an equipotential major surface thereof on a side opposite an operating major surface thereof;

~~an amplifier formed at least in part in said semiconductor material~~ having an input and an output provided at least in part on said semiconductor material substrate at said operating major surface thereof, said amplifier being capable of providing signals at said output thereof representative of signals occurring at said input thereof; ~~and~~

a coupler having an oblong input conductor of a selected input length provided on said operating major surface of said semiconductor substrate electrically coupled at one end thereof to said amplifier output, and further having an oblong output conductor of a selected output length provided on said operating major surface of said semiconductor substrate closely adjacent to said input conductor with said input conductor over said input length being substantially parallel to said output conductor over said output length, said output conductor being electrically coupled at one end thereof to said amplifier input; ~~and~~

a capacitor electrically coupling said coupler output conductor through said capacitor to said amplifier input.

2. (Original) The device of claim 1 wherein said semiconductor material substrate is formed of gallium arsenide.

3. (Canceled)

4. (Currently amended) The device of claim 1 further comprising a transfer system that, with said capacitor, electrically coupling couples said coupler output conductor to said amplifier input, said transfer system having an oblong input conductor of a selected input length provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said coupler output conductor but free of other connections on an opposite end thereof to other structures on said operating major surface, and having an oblong output conductor of a selected output length provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said amplifier input but free of other connections on an opposite end thereof to other structures on said operating major surface.

5. (Previously presented) The device of claim 1 wherein said amplifier comprises a transistor formed at least in part in said semiconductor material and having first and second terminating regions and having a control region therein by which it is capable of being directed, by electrical energization thereof, to effectively provide a conductive path of a selected conductivity between said first and second terminating regions, a selected one of said first and second terminating regions being coupled to said amplifier output and said control region being coupled to said amplifier input.

6. (Currently amended) The device of claim 1 wherein said coupler input conductor has a continuous portion thereof on said operating major surface electrically coupled at one end thereof to said amplifier output and has ~~[[at]] an opposite end thereof, and connected thereto, an input extension~~ comprising a sequence of conductive pads on said operating major surface interconnected by ~~an~~ at least one elevated

conductor having portions between said conductive pads that are relatively easily removable, and wherein said coupler output conductor has a continuous portion thereof on said operating major surface electrically coupled at one end thereof through said capacitor to said amplifier input and has ~~[[at]]~~ an opposite end thereof, ~~and connected thereto, an output extension~~ comprising a sequence of conductive pads on said operating major surface interconnected by ~~[[an]]~~ at least one elevated conductor having portions between said conductive pads that are relatively easily removable.

7. (Currently amended) The device of claim ~~[[3]]~~ 1 wherein said capacitor ~~is formed by~~ comprises a varactor having a conductor connected thereto through which a low frequency voltage can be further provided across a semiconductor material junction in said varactor.

8. (Currently amended) The device of claim 4 further comprising a supplemental amplifier having an input and an output provided at least in part on said semiconductor material substrate at said operating major surface thereof with said supplemental amplifier being capable of providing signals at said output thereof representative of signals occurring at said input thereof, and having said input thereof electrically coupled to both said coupler output conductor and said transfer system input conductor and wherein said capacitor used in electrically coupling couples said transfer system output conductor to said amplifier input.

9. (Currently amended) The device of claim 4 wherein said transfer system input conductor has a continuous portion thereof on said operating major surface electrically coupled at one end thereof to said coupler output conductor and has ~~[[at]]~~ an opposite end thereof, ~~and connected thereto, an input extension~~ comprising a sequence of conductive pads on said operating major surface interconnected by ~~an~~ at least one elevated conductor having portions between said conductive pads that are relatively easily removable, and wherein said transfer system output conductor has a continuous portion thereof on said operating major surface electrically coupled at one end thereof to said amplifier input and has ~~[[at]]~~ an opposite end thereof, ~~and connected thereto, an output extension~~ comprising a sequence of

conductive pads on said operating major surface interconnected by ~~an~~ at least one elevated conductor having portions between said conductive pads that are relatively easily removable.

10. (Original) The device of claim 5 wherein said semiconductor material substrate is formed of gallium arsenide.

11. (Original) The device of claim 5 wherein said transistor is a high electron mobility transistor.

12. (Previously presented) The device of claim 5 wherein that remaining one of said first and second terminating regions has an inductance coupled therefrom to said conductive ground plane.

13. (Currently amended) The device of claim 6 further comprising a transfer system that, with said capacitor, electrically coupling couples said coupler output conductor to said amplifier input, said transfer system having an oblong input conductor of a selected input length provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said coupler output conductor but free of other connections on an opposite end thereof to other structures on said operating major surface, and having an oblong output conductor of a selected output length provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said amplifier input but free of other connections on an opposite end thereof to other structures on said operating major surface, and wherein said transfer system input conductor has a continuous portion thereof on said operating major surface electrically coupled ~~at one~~ to said continuous portion end thereof ~~to of~~ said coupler output conductor and has ~~[[at]] an opposite end thereof, and connected thereto, an input extension~~ comprising a sequence of conductive pads on said operating major surface interconnected by ~~[[an]]~~ at least one elevated conductor having portions between said conductive pads that are relatively easily removable, and wherein said transfer system output conductor has a continuous portion thereof on said operating major surface electrically ~~coupled~~ at one end thereof coupled through said

capacitor to said amplifier input and has ~~[[at]]~~ an opposite end thereof, ~~and connected thereto, an output extension~~ comprising a sequence of conductive pads on said operating major surface interconnected by ~~[[an]]~~ at least one elevated conductor having portions between said conductive pads that are relatively easily removable.

14. (Currently amended) The device of claim ~~[[8]]~~ 32 wherein said capacitor ~~is formed by~~ comprises a varactor having a conductor connected thereto through which a low frequency voltage can be further provided across a semiconductor material junction in said varactor.

15. (Original) The device of claim 11 wherein said transistor is a pseudomorphic high electron mobility transistor.

16. (Currently amended) The device of claim 13 further comprising a ~~capacitor used in~~ supplemental amplifier having an input and an output provided at least in part on said semiconductor material substrate at said operating major surface thereof with said supplemental amplifier being capable of providing signals at said output thereof representative of signals occurring at said input thereof, and having said input thereof electrically coupling coupled to both said continuous portion end of said coupler output conductor and said continuous portion end of said transfer system output input conductor to said amplifier input.

17. (Currently amended) The device of claim 16 wherein said capacitor ~~is formed by~~ comprises a varactor having a conductor connected thereto through which a low frequency voltage can be further provided across a semiconductor material junction in said varactor.

18. (Currently amended) A feedback oscillator device formed with an integrated circuit providing a signal therein with a selected frequency of magnitude oscillation, said device comprising:

a semiconductor material substrate having a conductive ground plane on an equipotential major surface thereof on a side opposite an operating major surface thereof;

an amplifier ~~formed at least in part in said semiconductor material~~ having an input and an output provided at least in part on said semiconductor material substrate at said operating major surface thereof, said amplifier being capable of providing signals at said output thereof representative of signals occurring at said input thereof; and

a transfer system having an oblong input conductor of a ~~selected input~~ length that is a quarter of that wavelength associated with said frequency of magnitude oscillation and is provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said amplifier output ~~but~~ without any member of any pair of coupled conductors of a different length being provided therebetween and also being free of other connections on an opposite end thereof to other structures on said operating major surface, and having an oblong output conductor of a ~~selected output~~ length that is a quarter of that wavelength associated with said frequency of magnitude oscillation and is provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said amplifier input ~~but~~ without any member of any pair of coupled conductors of a different length being provided therebetween and also being free of other connections on an opposite end thereof to other structures on said operating major surface, said input conductor being spaced apart from said output conductor sufficiently to avoid any substantial electromagnetic coupling therebetween at said operating major surface.

19. (Original) The device of claim 18 wherein said semiconductor material substrate is formed of gallium arsenide.

20. (Currently amended) The device of claim 18 further comprising a capacitor ~~used in~~ electrically coupling with said transfer system ~~output conductor~~ said amplifier output to said amplifier input.

21. (Previously presented) The device of claim 19 wherein said amplifier comprises a transistor formed at least in part in said semiconductor material and having first and second terminating regions and having a control region therein by which it is capable of being directed, by electrical energization thereof, to effectively provide a conductive path of a selected conductivity between said first and second terminating regions, a selected one of said first and second terminating regions being coupled to said amplifier output and said control region being coupled to said amplifier input.

22. (Currently amended) The device of claim ~~[[20]]~~ 18 wherein ~~said capacitor and~~ said transfer system ~~have a~~ has at least one circuit portion in series therewith having an impedance therein dependent on frequency ~~exhibiting~~ so as together exhibit an extreme impedance value at a resonant frequency.

23. (Previously presented) The device of claim 21 wherein that remaining one of said first and second terminating regions has an inductance coupled therefrom to said conductive ground plane.

24. (Currently amended) The device of claim ~~[[22]]~~ 20 wherein said capacitor ~~is formed by~~ comprises a varactor having a conductor connected thereto through which a low frequency voltage can be further provided across a semiconductor material junction in said varactor.

25. (Previously presented) The device of claim 1 wherein said coupler output conductor is coupled at one end thereof to said amplifier input without a conductor extending as a connector between them on said operator major surface.

26. (Previously presented) The device of claim 1 wherein said coupler input conductor coupled at one end thereof to said amplifier output is free of other connections on an opposite end thereof.

27. (Currently amended) The device of claim 1 wherein said selected input length and said selected output length are each a quarter of that wavelength associated with a ~~desired~~ frequency of magnitude oscillation of a signal in said oscillator device.

28. (Previously presented) The device of claim 4 wherein said transfer system input conductor is spaced apart from said transfer system output conductor sufficiently to avoid any substantial electromagnetic coupling therebetween at said operating major surface.

29. (Currently amended) The device of claim ~~[[4]]~~ 8 wherein said coupler input conductor coupled at one end thereof to said amplifier output is free of other connections on an opposite end thereof.

30. (Currently amended) The device of claim 4 wherein said selected input and output lengths of said coupler input and output conductors, and said selected input and output lengths of said transfer system input and output conductors, are each a quarter of that wavelength associated with a ~~desired~~ frequency of magnitude oscillation of a signal in said oscillator device.

31. (Currently amended) The device of claim 8 wherein said capacitor and said transfer system have ~~[[a]]~~ at least one circuit portion in series therewith having an impedance therein dependent on frequency ~~exhibiting so as together exhibit~~ an extreme impedance value at a resonant frequency.

32. (Currently amended) The device of claim 18 wherein said ~~coupler~~ transfer system output conductor is coupled at one end thereof to said amplifier input without a conductor extending as a connector between them on said operator major surface.



33. (Currently amended) The device of claim 18 ~~wherein said coupler~~ further comprising a supplemental amplifier having an input and an output provided at least in part on said semiconductor material substrate at said operating major surface thereof with said supplemental amplifier being capable of providing signals at said output thereof representative of signals occurring at said input thereof, and having said input thereof electrically coupled to said transfer system input conductor coupled at one end thereof to said amplifier output is free of other connections on an opposite end thereof.

34. (Currently amended) The device of claim 18 ~~wherein said selected input length and said selected output length are each a quarter of that wavelength associated with a desired frequency of magnitude oscillation of a signal in said oscillator device~~ 20 further comprising an inductor electrically coupling with said capacitor and said transfer system said amplifier output to said amplifier input.

35. (Previously presented) The device of claim 21 wherein said transistor is a high electron mobility transistor.

36. (Currently amended) The device of claim 31 wherein said transfer system input conductor is spaced apart from said transfer system output conductor sufficiently to avoid any substantial electromagnetic coupling therebetween at said operating major surface, and wherein said selected input and output lengths of said ~~coupler input and output conductors, and said selected input and output lengths of said~~ transfer system input and output conductors, are each a quarter of that wavelength associated with a ~~desired~~ frequency of magnitude oscillation of a signal in said oscillator device.

37. (Previously presented) The device of claim 35 wherein said transistor is a pseudomorphic high electron mobility transistor.

38. (New) The device of claim 18 further comprising a coupler that, with said transfer system, electrically couples said amplifier output to said amplifier input, said coupler having an oblong input conductor of a selected input length provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said amplifier output, and having an oblong output conductor of a selected output length provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said amplifier input.

39. (New) The device of claim 22 further comprising a coupler in said circuit portion that, with said transfer system, electrically couples said amplifier output to said amplifier input, said coupler having an oblong input conductor of a selected input length provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said amplifier output, and having an oblong output conductor of a selected output length provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said amplifier input.

40. (New) The device of claim 34 further comprising a coupler that, with said transfer system, said capacitor and said inductor, electrically couples said amplifier output to said amplifier input, said coupler having an oblong input conductor of a selected input length provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said amplifier output, and having an oblong output conductor of a selected output length provided on said operating major surface of said semiconductor substrate electrically coupled substantially on said operating major surface at one end thereof to said amplifier input.